AUDECIBEL

SEPTEMBER 1955

In this issue

Industrial Noise And Human Hearing
by Martin Hirschorn

Auriculostomy
by C. F. McDonald, M.D. and Edwin C. Bach, M.D.

The Magnificent Difference
by David Barnow

JOURNAL OF THE SOCIETY OF HEARING AID AUDIOLOGISTS

Official Publication:
SOCIETY OF
HEARING AID AUDIOLOGISTS

AUDECIBEL

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Audecibel's message is not limited to circulation to the hearing aid industry, but is widely distributed to physicians; eye, ear, nose and throat specialists; teachers, clinicians and others working with the hard of hearing; and schools, hospitals, Veterans Administration facilities and social service agencies.

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AUDECIBEL

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THE PURPOSE: AUDECIBEL is strictly an educational and professional journal, the purpose of which is to bring to the otologist, the hearing aid audiologist, and others interested in the field of hearing and audiology, authoritative articles, papers and data concerned with research, techniques, education and new developments in the field of treating and assisting the hard of hearing.

THE GOAL: The Society of Hearing Aid Audiologists is dedicated to the goal of reaching and maintaining the highest possible ethical standards in the field of hearing aid audiology. AUDECIBEL is dedicated to the goal of rapport among all those concerned with the hard of hearing so that mutual and overlapping problems may be recognized and outstanding ideas, skills and experiences be shared for the greater benefit of all. You are urged to write in for details of how YOU may participate in and benefit by this worthwhile endeavor.

Thornton Zanolli
Editorial Director

Now Hear This...

Several changes were made in the by-laws of the Society of Hearing Aid Audiologists at the Annual Meeting held in Detroit in June. Among these changes were the re-adjustment of territorial units of the Society, and the adoption of a new class of membership to be known as "Honorary Fellow."

In the shifting of territorial units Canada has been made a separate unit, and a new Governor, Kenneth Steeves, of Windsor, Ontario, has been elected to head this Canadian Territory. The Northwest Territory has been partially divided into the Pacific Territory consisting of the states of Oregon, California and the Republic of Mexico. Verl E. Conn of San Diego, California, was elected as the first Governor for this new territory. The remainder of the Northwest Territory will be as formerly constituted plus the states of Iowa and Minnesota.

The regularly scheduled election of new Governors for the Society found George Holland of Lubbock, Texas, replacing Walter Metcalfe as Governor of the Southwest Territory. All of these changes are properly listed in the masthead of this month's issue of AUDECIBEL.

A proposal from the floor to institute several new classes of membership was referred to the Board of Governors. At the Board meeting immediately following the Annual Meeting the membership classification to be known as "Honorary Fellow" was approved. Members receiving this type of membership will be so designated by the Board of Governors on the basis of outstanding service to the hard-of-hearing and/or to the hearing aid industry.

In an important action of the Board of Governors a proposal was approved that provides that anyone who has heretofore qualified as a Hearing Aid Audiologist who is not now a member of the Society may rejoin by paying one year's dues.

Regional meetings of the Society were discussed and tentatively planned — the first such meeting to be held on the Pacific Coast under the direction of Pacific Governor Verl E. Conn. The probable date of such a meeting would fall after the first of the year.

Finally, a date has been set for the 1956 Fifth Annual Meeting of the Society of Hearing Aid Audiologists. The event is scheduled for June 15-17, at the Hotel Statler, Detroit. This date will also appear in the masthead of this magazine regularly. The Program Committee is working continuously on plans to make this the biggest and best meeting ever held and will keep you informed as more definite plans are developed.

THORNTON ZANOLLI
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Part I . . .

Industrial NOISE

and HUMAN HEARING

by MARTIN HIRSCHORN

President, Industrial Acoustics Company, Inc.

The problem of industrial noise is growing in importance. Mr. Hirschorn discusses its effects, significance and criteria.

NOISY operations in industry have undoubtedly been a problem since the beginning of industrial manufacturing operations. "Boilermaker's deafness" for instance is a term which probably can be traced back to the middle of the last century. However, industrial noise as an important problem requiring an immediate solution is of only very recent origin. There are a number of general reasons for the recent emergence of this problem; amongst them being the strong possibility that modern man is more sensitive to noise than his ancestors. Another is the tendency for some types of industrial operations to use machines designed for more power, higher speeds and less weight. All these are factors which, in combination, are likely to result in noisier machinery.

The major immediate reason for the nationwide attention to this problem must be attributed to the increasing number of claims for compensation awards on the grounds of deafness incurred while working in a noisy environment. The situation became more acute as a result of several court decisions favoring the claimant. Mr. Noel S. Symons, a lawyer specializing in the legal aspects of industrial noise, reports that: "In 1948 the court of Appeals, the highest court in New York State, ruled that an employee in a drop forge shop was entitled to a schedule award for occupational loss of hearing though he had lost no time from work and had not suffered any loss of wages because of his hearing impairment. On October 6, 1953 the Supreme Court of Wisconsin upheld a similar award for impaired hearing to a drop forge worker under the act of that state." (Ref. 1).

Statutory regulations for deafness compensation schedules vary from state to state, but the nationwide scope of the problem will be evident from Table I as presented by Dr. Meyer S. Fox (Ref. 2).

MARTIN HIRSCHORN, *President and founder of Industrial Acoustics Co., Inc., is a graduate engineer of the University of London, England, with a B.Sc. (Eng.) degree. He has done postgraduate work in chemical engineering at Columbia University and in mechanical engineering at New York University. He is a director of the National Noise Abatement Council and a member of the Acoustical Society of America.*

I. A. C. Standard audiometric rooms at Wisconsin State Fair, 1954, where the hearing of 3600 persons was tested within about eight days.

TABLE I

Analysis of provisions of workmen's compensation laws for hearing loss — maximum amounts which could be paid in dollars — for scheduled injuries — January 1, 1952. In this group of states compensation for temporary disability is allowed in addition to allowance for permanent partial disability.

Jurisdiction	Hearing One Ear	Hearing Both Ears
Arizona	$1,100	$ 3,300
Arkansas	$1,000	$ 3,750
Colorado	$ 980	$ 3,892
Connecticut	$1,872	$ 5,616
Delaware	$1,560	$ 3,120
District of Columbia	$1,820	$ 7,000
Federal Employees Compensation Act	$6,300	$24,000
Idaho	$ 875	$ 3,750
Longshoremen and Harbor Workers' Act	$1,820	$ 7,000
Maine	$ 600	$ 1,560
Maryland	$1,250	$ 3,750
Massachusetts	$2,000	$ 4,000
Mississippi	$1,000	$ 3,750
Nevada	$1,700	$ 5,100
New Jersey	$1,800	$ 6,000
New Mexico	$1,050	$ 4,050
North Carolina	$2,100	$ 4,500
North Dakota	$1,100	$ 3,740
Ohio	$ 805	$ 4,025
Oregon	$2,700	$ 8,640
Rhode Island	$1,200	$ 3,000
South Dakota	*	*
Tennessee	*	$ 3,750
Utah	(1)	(1)
Washington	$1,140	$ 4,100
Wisconsin	$1,850	$12,333
Wyoming	$1,525	$ 3,000

In this group of states compensation for temporary disability is allowed in addition to permanent partial disability with certain limitations as to period.

Jurisdiction	Hearing One Ear	Hearing Both Ears
California	$1,200	$ 6,000
Florida	$1,400	$ 5,250
Georgia	*	$ 3,600
Illinois	$1,700	$ 4,250
Indiana	$2,025	$ 5,400
Kansas	$ 625	$ 2,500
Kentucky[4]	$1,575	*
Minnesota	$1,760	$ 5,440
Montana	$ 687	$ 4,125
Nebraska	$1,300	$ 2,600
New Hampshire	$1,260	$ 5,100
New York	$1,920	$ 4,800
Vermont	$1,063	$ 4,750

*No set amount provided.

In this group of states compensation for temporary disability is deducted from the allowance for permanent partial disability.

Jurisdiction	Hearing One Ear	Hearing Both Ears
Alabama	$1,150	$ 3,450
Iowa	$1,400	$ 4,900
Louisiana	(2)	(2)
Michigan	*	*
Missouri	$1,320	$ 5,040
Oklahoma	(3)	(3)
Pennsylvania	*	$ 4,500
South Carolina	$1,750	$ 3,750
Texas	*	$ 3,000
Virginia[4]	$1,000	*
West Virginia	$1,200	$ 3,600

*No set amount provided.

1. Commission may provide benefits up to maximum of 200 weeks. ($6260).

2. Commission may provide benefits up to maximum of 100 weeks. ($3000).

INDUSTRIAL NOISE

(*Continued from previous page*)

3. To be fixed by commission but not to exceed $3000.
4. During 1952, compensation for loss of hearing on one ear was raised in the schedule in the states of Kentucky to $1800, and in Virginia to $1250. (Supplement to 1952 Analysis).

The reason that there has not been an avalanche of such compensation claims is due to the differentiation between temporary and permanent deafness. In order to establish permanent deafness the worker must have been away from the noisy environment for a minimum of six months.

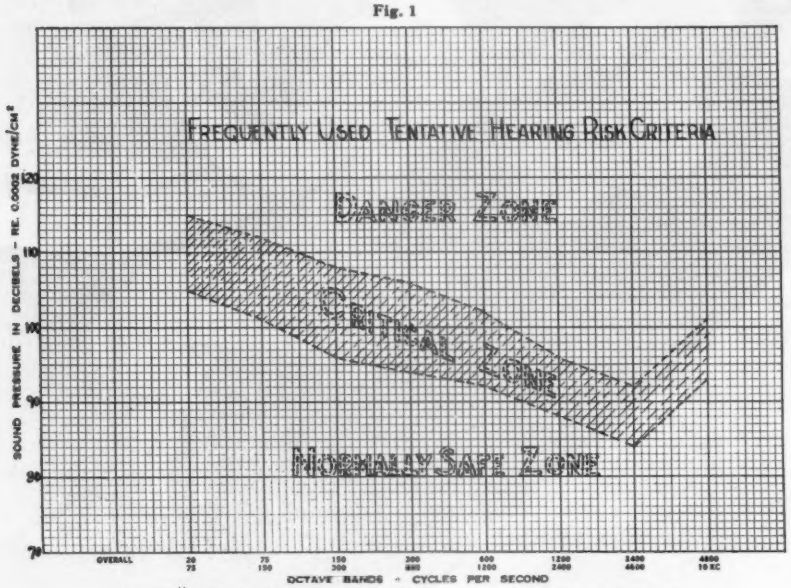
Nevertheless, the cost potential to industry inherent in deafness compensation awards runs into astronomical figures. Mr. Symons has suggested that: "On a nationwide basis, the cost might well run into billions of dollars and it might easily threaten the financial stability and security of many industries and insurance carriers." (Ref.2).

The most pronounced physical effect of noise is damage to the ear. Exposure to intense noise from machinery causes partial and temporary hearing losses which may last from a few minutes to several hours. Continued and repeated exposures can result in partial but permanent deafness. Douglas E. Wheeler reports that "of a sample containing 175 men daily exposed to very high level noise, 45 per cent retained normal hearing, in some instances after ten years of exposure; on the other hand, 23 per cent displayed severe bi-lateral losses, in some instances after only a few months exposure."

Apart from deafness, no other physiological effects have been observed in noise levels extending to about 120 db. The effects on man due to turbo-jet engine noise and siren-generated sounds of the order of 150 db are summarized by Dr. Karl D. Kryter as follows:

1) Severe but temporary hearing loss.
2) Heating of the skin (rats and guinea pigs died of increased body temperatures).
3) Vibration of cranial bones and air movement in the nasal passages and sinuses; also, blurred vision at frequencies between 700 cps and 1500 cps.
4) An apparent weakening of the muscular structure.

Fig. 1



Based on Dr. H. E. Hardy's "Tentative Hearink Risk Criteria" (Ref. 5)

Paul E. Sabine states that "there is a wealth of reliable data from medical sources in support of the statement that sustained exposure to noise is a contributing factor in impaired hearing, chronic fatigue that lowers bodily resistance, neurasthenia, increased blood pressure and decreased working and mental efficiency and that noise should rightfully be classified as an occupational hazard along with gases, fumes, dust, toxic liquids and bacteria."

Apart from the physiological and adverse morale effects of noise, most serious effects may occur where continuous or sudden noises prevent communication between operators or equipment. It is obvious that such an inability to communicate where necessary will result in inefficiency and may also contribute to the causation of accidents. (Ref. 3).

The problem of setting up deafness risk criteria for industry is a very critical one. It is probably safe to say that not enough information is presently available in order to specify exposure noise levels for the ear which must not be exceeded in order to prevent deafness. Quite a lot of work is being done along these lines but no definite medical findings can be expected in the immediate future. Moreover, in the event that definite medical findings are announced, which might at some time form the basis for industrial legislation on maximum permissible noise levels, many industries are likely to find themselves in a very serious situation, because noise control can in some instances be very costly. A difference of a few decibels in the risk criterion may mean a saving of or the expenditure of hundreds of millions of dollars in industrial noise control measures. For this reason, and because of the medical complexities involved, all proposed hearing risk criteria are presently regarded as tentative.

Dr. Kryter states that "the

(Continued on page 10)

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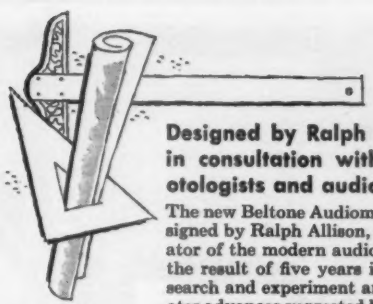

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INDUSTRIAL NOISE

(*Continued from page 8*)

maximum safe intensity at which no deafening effect will occur is probably in the neighborhood of 85 db above 0.0002 microbar of 'critical bands' of noise." (Ref. 4).

Dr. H. C. Hardy of the Armour Research Foundation has proposed tentative hearing risk criteria which are presented in three zones: (Ref. 5).

1) A normally safe noise level zone where there is negligible risk.
2) A critical noise level zone where a hearing loss risk is more likely to exist.
3) A "danger zone" where a hearing loss risk can be expected in many instances. This curve is shown in figure 1.

Dr. Leo L. Beranek, of M.I.T., quotes the following damage risk criteria (Ref. 6).

Octave Band in C.P.S.	Octave Band Levels Of Continuous Noise in Decibels
37.5 - 75	110
75 - 150	102
150 - 300	97
300 - 600	95
600 - 1200	95
1200 - 2400	95
2400 - 4800	95
4800 - 9600	95

These tentative criteria can be regarded as a general guide in order to determine whether noise levels exist which can be regarded as critical from a deafness compensation point of view.

One of the best means available to industry to protect itself against unjustifiable hearing loss claims, apart from reducing noise as such, is a program of audiometric testing. Preemployment audiometric tests will determine whether an employee already suffers a hearing loss or not. Periodic audiometric tests will check an employee's susceptibility to hearing loss. If he is susceptible he could be relocated in a less noisy environment. In order for such tests to have any value it is important to have a room quiet enough for test-tones at the O-db setting of the hearing loss dial to be audible at 500 cps and higher. According to Dr. Jerome R. Cox, of the Liberty Mutual Insurance Co., therefore, (Ref. 7) the noise level indicated by spectrum #1 should not be exceeded. Dr. Aram Glorig, Director of Research, American Academy of Ophthalmology and Otolaryngology, in a recent talk tentatively suggested spectrum #2 as the maximum background noise for reliable industrial hearing tests.

Octave Bands in C.P.S.	Sound Level in Decibels	
	Spectrum #1	Spectrum #2
20 - 75	—	65
75 - 150	—	45
150 - 300	—	35
300 - 600	38	35
600 - 1200	40	35
1200 - 2400	48	40
2400 - 4800	60	50
4800 - 9600	—	65

In the majority of cases it will be necessary to provide special soundproofed structures in order to obtain such low noise levels. Fortunately standard prefabricated audiometric testing rooms are commercially available designed to reduce the acoustical spectrum to these levels. A typical installation of this type is illustrated in the photograph on page 7.

(*In Part II of* Industrial Noise and Human Hearing, *Mr. Hirschorn concludes with a discussion of acoustics and preventive measures.*)

FILM PRESENTS CHILD TESTING TECHNIQUES — Staff members of the John Tracy Clinic measure hearing loss of a preschool child through a game which uses an audiometer and play equipment. The child responds to a beep from the audiometer by assemblying pegs. The Clinic describes this technique in a 16mm sound color film, "Too Young To Say." The film made through a production grant by the Beltone Hearing Aid Co., was produced by the University of Southern California Cinema Department.

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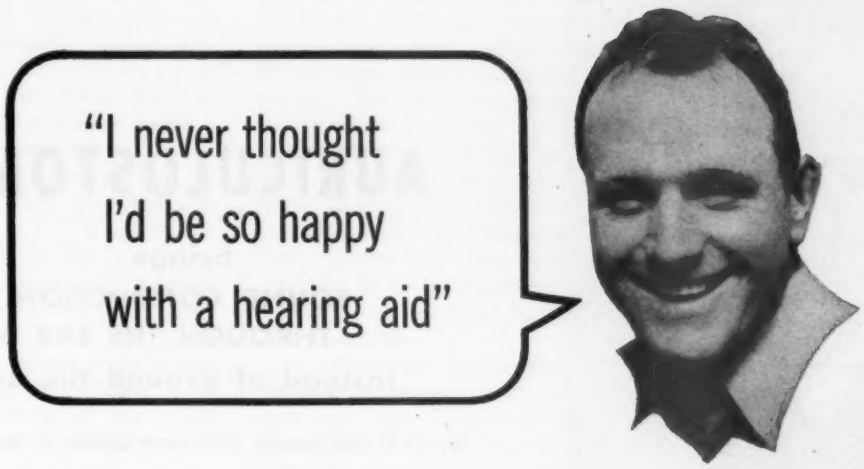

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Button and cord of old-type receiver.

Reprinted from the A.M.A. Archives of Otolaryngology, May, 1955.

AURICULOSTOMY

brings SOUND CONDUCTION THROUGH THE EAR instead of around the ear

by C. F. McDonald, M.D. and Edwin C. Bach, M.D.

It has been predicted by an official of one of the larger hearing-aid companies that in the near future all hearing aids, together with power supply and microphone, will be worn entirely on the head in some form or another. Even at this time hearing aids completely incorporated in a spectacle frame are being perfected. A receiver for each ear greatly improves auditory perspective, and it is the head-borne instrument which can provide two receivers most effectively. The recent use of the transistor, printed circuit, and crystal detector has made it possible to build hearing aids of such efficiency and small size that a complete instrument can all but be worn in the auditory meatus itself.

Most hearing aids in use today require heavy batteries and a microphone, which must be worn under clothing. Long wires and tubes cause loss in power and extraneous noise. Protruding buttons and wires are conspicuous. Delicate connections frequently fail in the case of an active deafened person. Even with the present head-borne instruments the tube or wire is conspicuous and exposed to damage.

An auriculostomy, with properly fitted mold, obviates these disadvantages and makes the hearing aid much more "wearable" and inconspicuous, with elimination of lost power and most extraneous noise.

The operation of auriculostomy consists of making a permanent hole through the auricle to provide the shortest and

Left, auriculostomy.

A, new mold connected to skull temple of a shell frame (head-borne hearing aid).

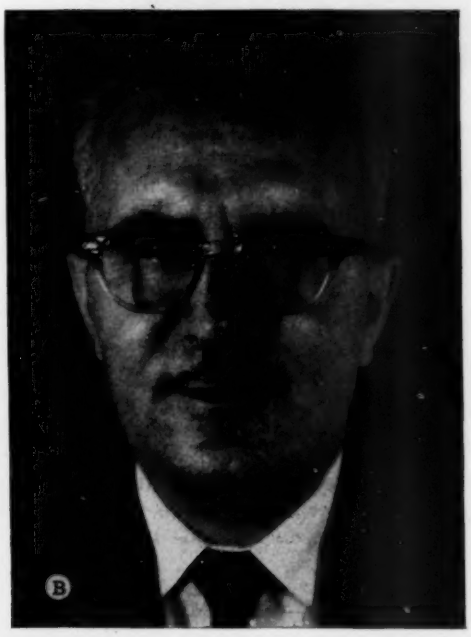
B, front view of patient with head-borne hearing aid.

least conspicuous route from the receiver of the hearing aid to the external meatus. This perforation is in the floor of the cavum tympani, behind the antitragus. Posteriorly it emerges at the lower end of the postauricular sulcus, behind the lobule of the ear.

Any physician qualified to do minor surgery can perform this operation. The cartilage of the auricle should, of course, be treated with careful asepsis and respect to avoid postoperative perichondritis. Its edges should be protected with a pad of subcutaneous tissue and skin, so pressure of the mold will not cause irritation and possible ulceration subsequently.

The following procedure gave a very satisfactory result:

After the usual skin preparation, the area is infiltrated with slightly less than 2 cc. of 2% procaine with epinephrine. A postauricular incision about 2 cm. long is made parallel and about 2 mm. lateral to the postauricular sulcus. It ends just within the lobule. The perichondrium is easily identified and incised. After elevating the perichondrium about 5 mm. to each side of the incision, a button of cartilage, about 8 mm. in diameter, is removed, leaving the perichondrium and skin of the anterior side intact. A single mattress suture engaged both layers of perichondrium and closed the skin incision. The suture was removed on the 5th day, and on about the 12th day actual cautery with a 2-mm. electrode was used to perforate through the center of the cartilaginous defect. Three days later a plastic plug 4 mm. in diameter was inserted until epithelialization was complete.



A one-piece impression, including the external meatus and the new aperture, was made. From this a mold was made by the ingenious patient, Mr. Charles Strzalkowski, who conceived the project originally. It is not visible except on inspection from the side. The lower end of the mold, behind the lobule, has a female opening which receives the male fitting attached to the tube of the receiver.

At the present time the patient uses his old-type aid with this mold. The tube goes behind, under his collar, but he states that his aid works better and that he has less trouble with it. He is delighted with the inconspicuous feature of the fitting.

With the head-borne instrument, auriculostomy will not only make the connections to the external meatus indiscernable, but give better anchorage and provide some barrier to "feed back," thus improving "wearability" in most important respects.

We sincerely believe that auriculostomy has considerable merit because of its inherent advantages.

It is obvious that this operation should not be done if the patient cannot tolerate a hearing aid. This, of course, is not uncommon in people with perceptive deafness, when recruitment and loss of discrimination occur with relatively slight and impractical amounts of amplification.

It must also be made clear to the patient that auriculostomy in no way improves the ear physiologically, as does the fenestration operation, with which auriculostomy may become confused in the lay mind.

We wish to point out that auriculostomy should impose improved relations and collaboration between family physician, otologist, and hearing-aid audiologist. This cooperation has not been evident in the past — much to the detriment of the patient.

LET'S GET ACQUAINTED

Do you know who manufactures the various important components of the hearing aids you sell?

Among all these necessary devices, the microphone is, perhaps, the most important, and this is where we come in. TIBBETTS has supplied practically every major hearing-aid manufacturer with over one million microphones for tube hearing aids and is now supplying crystal microphones for transistor hearing aids on an ever-larger scale.

No magnetic microphone now available can match the quality of our new 71 B line. Just listen to one and hear for yourself, and then ask your manufacturer if he can supply instruments to you with TIBBETTS microphones — or perhaps he already does!

TIBBETTS INDUSTRIES INC.
CAMDEN, MAINE

DAHLBERG *Introduces* "MIRACLE-EAR"

Kenneth Dahlberg, president of the Dahlberg Co., shows how the "Miracle-Ear" can be completely covered by the hair.

WORLD'S FIRST HEARING AID WORN COMPLETELY IN EAR

A NEW hearing aid called the "Miracle-Ear" — a device small enough to be worn in the ear, yet powerful enough to amplify sound energy 2,500,000 times — is in production by The Dahlberg Company, Golden Valley, Minneapolis 22, Minn.

Hearing aids, according to Kenneth Dahlberg, president of the hearing aid firm, are one of the true examples of electronic sub-miniaturization. Although radio tubes have utilized miniature components for years, the average hearing aid requires far smaller components. From an engineering point of view, the "Miracle-Ear" is said to be an example of "ultra sub-miniaturization."

Because the smaller the hearing aid, the more comfortable and easier it is to wear, hearing aid design engineers have been searching for better answers to this problem.

Combining new components in an attractive and easy-to-wear shape — yet still providing good hearing — is the task of the hearing aid engineer. The "Miracle-Ear," according to the manufacturer, is an outstanding example of ultra sub-miniaturization, being the first aid to combine a complete electronic, all-transistor circuit with battery and receiver self-contained in one case small enough to be worn in the ear.

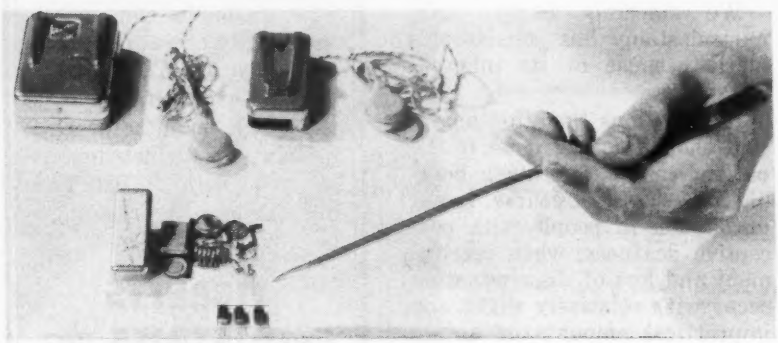
There is no separate receiver — no separate cord. The entire unit weighs ½ ounce and offers numerous advantages never before possible. For example, a user can handle the telephone as do persons with normal hearing.

The "Miracle-Ear" can be used with or without eyeglasses and can be put on and taken off quickly and easily.

An interesting fact about the new hearing aid is that it employs the world's smallest electronic amplifier — an amplifier so small that it can be concealed by a finger-tip, yet is capable of amplifying voltages approximately 2,500 times, yielding a power output of one milliwatt.

The new aid uses three Raytheon transistors and a Mallory hearing aid battery provides the power for the "Miracle-Ear." Smaller than a man's shirt button, the battery measures approximately 7/16 inch in diameter and 1/8 inch in thickness.

One important problem which was solved by Dahlberg engineers, and which may be said to be the key to the practical use of such an instrument, was the elimination of feedback between output and input, which was caused by the nearness of receiver and microphone.



PROGRESS IN HEARING AID DESIGN is shown in this display of Dahlberg hearing aids and components. Pointer indicates parts of the new "Miracle-Ear".

KEY to a multi-million dollar industry

One by one the barriers to universal adoption of hearing aids by the hard of hearing have been swept away.

From the Raytheon vacuum tubes of 1939, to the lower drain Raytheon tubes that made possible the single-unit hearing aid, to Raytheon Hearing Aid Transistors, and finally the tiniest Raytheon Transistors of today, Raytheon has had an important share of the responsibility for the ever-widening use of hearing aids.

The new hearing aids, employing these ultra-small and ultra-effective Transistors, remove the last remaining objection to hearing aid use. They help make the modern hearing aid virtually invisible (in spectacle frames, under the hair, in the ear, behind the ear, etc.), yet their tiny size has not diminished the high efficiency and dependability that hearing aid makers and users have learned to expect of *Raytheon.*

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The MAGNIFICENT DIFFERENCE

by David Barnow

Vice-president,
Beltone Hearing Aid Co.

An address before the Fourth Annual Meeting of the Society of Hearing Aid Audiologists, June 10-11-12, Detroit.

ELEVEN and a half years ago almost to the day, there loomed on the horizon what seemed like a tidal wave that was going to engulf the entire hearing aid industry.

Actually, what has happened since that time? When you remove the smokescreen of the crusade what actually happened is that we, in the hearing aid business, were faced with a question of whether or not our method of distribution was the right one or whether there was in fact a better one.

Certainly, there never was a question of whether or not we wanted competition. I'm sure everyone in this room and everyone in the industry agrees that competition is the very lifeblood of the free enterprise system because we have seen again and again in every business and particularly in ours that as competition grew so our market grew.

Let's take a perspective look now that we have 11½ years behind us and see just what is this difference and how important is it. By way of illustration, there was an Englishman and a Frenchman who were discussing the differences between men and women. The Englishman took the position that actually there wasn't a great deal of difference between men and women. At this statement, the Frenchman jumped from his seat, clicked his heels at attention, gave a French salute and he said, "Vive la difference!" I submit that in our picture here "Vive la difference!"

On the one hand, we had a competitor who said the proper way to distribute hearing aids is with low price, versus the rest of the industry with a full and fair price. The competitor said they should be sold over the counter in stores; the rest of the industry said we need home demonstrations. The competitor said it should be a package; the rest of the industry said there should be individual fittings. The competitor said no audiograms were needed to do a proper fitting job; the rest of us said audiograms were necessary. The competitor said non-specialists could dispense hearing aids; the rest of us said specialists were needed. The competitor said part-timers, opticians, jewelers, drug-store owners and employees could handle the dispensing of hearing aids; the rest of us said no, we need full-time men to make a career of their business. And the competitor said no post-sale service was necessary where the rest of us felt that post-sale, rehabilitative service, in the home, if necessary, was most important.

And these *differences* do cost money.

What is the picture today? This competitor gave a pretty good account of himself. He has established the largest number of dealers at the retail level that any company has. He has done a strong job of advertising. And yet today after a rough and tough and no-punches-pulled battle, he is far from having achieved his announced objective of dominating the industry. He still has a long way to go. I think we can take pride in the fact that again the right way has had the right of way. The experience that we've had pretty strongly indicates that the hard of hearing *need*, and what's more important, *want* the kind of fitting and service that we've rendered and what's furthermore, is willing to pay for it. Vive la *difference*!

To understand why these significant facts have occurred, we must look into the psychological background of the hard of hearing. I was very happy to hear Buel Kent say that one thing we need in this industry and one of the things that will lead us closer to professional status is an organized body of knowledge. Towards that end, Beltone has been continuously doing market research of various kinds. I've reported to you some of the results of our previous research at your previous meetings. I'd now like to report to you some of the re-

sults of our current motivational study.

What is it that makes the hard of hearing tick? How do they think? How do they feel? What actually motivates them in every aspect of their lives? Obviously, I am not going to be able to give you the full report in the 15 minutes allotted me. Some of it is classified; you'll see the results of it in our advertising. As always with research, it invariably glorifies the obvious. I'm sure none of this will come to you as a complete revelation.

First let's look at the modes of adjustment to hearing loss. What is the state of mind of the hard-of-hearing person? In a word, he is bound by a feeling of insecurity and anxiety.

How does he adjust to his hearing loss? There are a series of steps that happen in varying degrees and in varying numbers. I'm sure you'll recognize your customer's as I unveil them. He withdraws and retreats. Some people deny that they have a hearing loss or are hard of hearing. In some people, insecurity becomes suspiciousness and blamefulness. And for some people, they try to compensate for their hearing loss by other activities such as visual activities or manual hobbies. Some people will adopt a "sour grapes" attitude. "Think of all the bad TV programs I'm able to miss." "Things could be much worse." So in summary, what do we have? Withdrawal, d e n i a l, blamefulness, compensation and rationalization.

So much for the adjustments to the hearing loss. Now let's take a look at what happens in the mental processes of buying a hearing aid. I think that will be of interest to all of you.

First, there is the initial contact. This can occur either voluntarily or through a member of the family.

Second, there's the decision to purchase a specific brand.

(See MAGNIFICENT DIFFERENCE on page 20)

Maico Salutes A Headliner . . .

Donald W. Ruble

OF PORTLAND, OREGON

DON Ruble of Portland, Oregon, a veteran of 10 years with Maico and the hearing aid industry, is probably the only man in the Maico distributor organization who was virtually "discharged" into the business at the end of his World War II service.

After completing his education at Portland State College, Don spent several years in foundry work, first as an apprentice, then as a journeyman coremaker, before he decided the atmosphere of a foundry just wasn't for him. His next position was with the Oregon State Industrial Commission, where he supervised first aid stations for taking care of industrial injuries. While in this post, he was in charge of first aid operations for more than 5,000 victims of the Van Port City, Oregon, flood disaster.

After three years as a pharmacist's mate and physical therapist in the Navy during World War II, Ruble was handed his discharge at Shoemaker, California, one sunny Sunday afternoon in December, 1945. He was hitch hiking to Oakland when fate . . . in the person of Chet Myhre, then Maico's Oakland distributor . . . stepped in to give him a lift. When Don told of his plans for entering the surgical supply business, Mhyre, proceeded to convince him that the hearing aid industry held a big future for him.

On his return to Portland, Don went to work for the Maico distributor there and remained with the firm for three years. After two years as distributor at Boise, Idaho, he returned to Portland to become Maico distributor in that city.

A member of I.H.A.A. as well as state and local hearing aid groups, Ruble is very active in community club work, particularly in Red Cross first aid instruction. He says the most gratifying experience he has had since entering the business was the successful fitting of a woman who for many years had sought help from a hearing aid without results. That was four years ago, and the woman . . . for whom other hearing aid dealers had given up hope . . . is still well satisfied with her Maico and Ruble's fitting.

A FEW SELECTED DISTRIBUTORSHIPS AVAILABLE

Inquiries will be held in strictest confidence

Maico MEDICAL ACOUSTIC INSTRUMENT CO.

L. A. Watson, President

21 North Third Street Minneapolis 1, Minn.

PRODUCTS and PEOPLE

PRODUCTS and PEOPLE is designed to keep you informed on current significant developments in the hearing aid industry and on significant happenings to individuals. Address contributions to PRODUCTS and PEOPLE, AUDECIBEL, P. O. Box 11, Lincoln Park, Mich.

Stanley Webster Laboratories Announces New Models

Stanley Webster Laboratories, Inc., has announced a new low and medium priced line to supplement the deluxe "Starline" models.

According to the manufacturer, those with mild and medium hearing loss, those with certain types of nerve deafness and those whose ears respond well to a "standard" hearing aid can be benefited by this new line of hearing aids.

The new "Crusader" aid will retail for $75. It features a 1¼-volt pen-light battery which can be bought at any drugstore. It is available in a 3-transistor model. A 4-transistor model, the "Crusader Senior," designed for more severe hearing loss, will be available at slightly higher cost. Sets are smaller than a pack of cigarettes.

In the medium priced line, a smaller set — the "Commander" — uses standard mercury batteries. These sets will retail for between $125 and $175 and are available in a variety of components to suit the individual's own hearing needs.

J. W. Manny, Inc. Holds Meeting

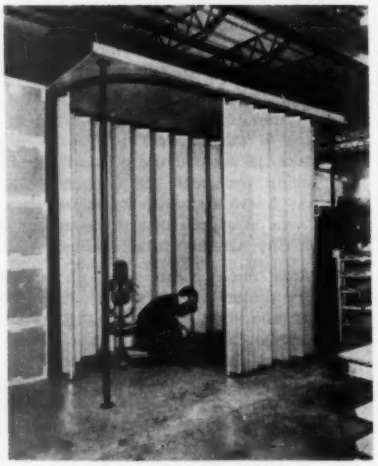
A distinguished group of thirty-six leading otologists and audiologists were guests at a luncheon given recently by J. W. Manny, Inc., New York, for the purpose of an informal discussion of modern phases of audiometry and product design.

Ralph Allison, a leading designer of audiometers, was the honored guest. He spoke on the future developments in the audiometer field.

Among the out of town guests were Dr. Everett Johnson, chief audiologist of the Veterans Administration, Washington, D.C., and Mr. A. M. Brooks, president of Ambco Company, Los Angeles, Calif.

Bemis TransWall Curtain Lowers Noise Level

The Bemis TransWall Curtain — a new product of the Bemis Bro. Bag Co. — has shown results in recent tests



Bemis TransWall Curtain

that have confirmed its utility in planning noise control installations in factories, according to the firm's Physical Research Department.

The tests, conducted in the chipping department of a foundry, showed a reduction of 15 decibels — from a starting noise level of 104 db to a level of 89 db. The figures represent a change from a noise level that may have serious implication for the comfort of the workers in the area to one that is believed to be safe in all frequencies of the noise spectrum.

All readings were taken at a distance of six feet from the chipping hammer. Assuming that noise levels above 90db are, at the least, undesirable (at those levels instructions must be given in a shout, and give-and-take conversation is almost impossible) the results using TransWall Curtains indicate that over 95% of the plant area "contaminated" by a high level noise source can be recovered for useful occupancy.

According to Bemis, advantages of the lower noise level are increased worker comfort, greater efficiency in communication, fewer errors and less accumulated irritation at the end of the work day. Furthermore, some experts claim that work efficiency is improved by lowering plant noise levels.

Tie Clasp Holds Hearing Aid

A gold-plated tie clip that becomes part of one of the smallest hearing aids produced was introduced recently by the Beltone Hearing Aid Co.

The clip anchors and connects the Beltone Allegro hearing aid to the inside of a man's shirt, according to David H. Barnow, executive vice-president.

"We have designed the new piece," Mr. Barnow said, "so that it can be worn attractively with any necktie, whether it be wide or narrow, in a bold or conservative design."

To wear the tie clip, a man need only slip it over the front of his tie; the hearing aid nests inconspicuously behind his shirt.

The new clip is designed primarily for men — but it is attractive enough so that women can wear it as a brooch pin or pocket ornament, Mr. Barnow said.

"The main effect of the new

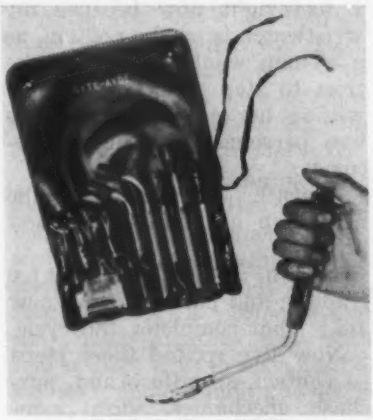
clip," Mr. Barnow concluded, "is to add one more way in which transistor hearing aids can be worn without calling attention to the wearer's hearing handicap."

AHS Reprints Available

Two new reprints — "Teaching About Hearing" and "I Hear Better in the Light" — are currently available, at 10 cents each, from the American Hearing Society, 817 14th St., N.W., Washington 5, D.C.

Of interest to secondary school officials and teachers, "Teaching About Hearing" is by Rose V. Feilbach (Mrs. Ralph Broberg), hearing conservation specialist for public schools, Arlington County, Virginia. It was reprinted with permission of the Journal of Health - Physical Education - Recreation magazine of the Association for Health, Physical Education, and Recreation, a department of the National Education Association.

"I Hear Better in the Light," is by Martha A. Congress, a hard of hearing woman who has adjusted to loss of hearing through the help of lip reading and a hearing aid. The article appeared in Hearing News, the American Hearing Society's publication.



Syte-Ayde Kit and Light

Light Sees Around Corners

A new inspection light, said to permit close examination of hard-to-see areas, bends light around corners by means of a combination light-focusing rod and magnifying mirror. Manufactured by the F. T. S. Corporation, 309 Vine St., Camden 2, N.J., it is available in kit form under the trade name, Syte-Ayde.

With pride
we announce
the COMPLETELY

NEW

Mid-States

SOFTEX

EARMOLD

Not just another "soft type" mold, but a thoroughly tested and completely resilient earmold. Developed by hearing people for hearing aid people. And, as usual, at a substantial saving.

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"The QUALITY Earmold Facility"

NOW! A Pre-Fabricated AUDIOMETRIC TESTING ROOM!

The I.A.C. Standard

AUDIOMETRIC TESTING ROOMS

(SERIES 400)

Especially Developed to Meet Industry's Need For an Economical, Guaranteed Soundproof Room!

Facilities for employee hearing tests have become an essential requirement in many industries. As a protective safeguard against unfounded compensation claims all companies should make audiometric tests of all employees and give pre-placement audiometric examinations to all new employees. This new, I.A.C. Pre-fabricated Audiometric Testing Room now makes this recommended hearing test program possible.

Write for Bulletin No. AT-14

Technician controls test from outside of series 400 room designed for single occupancy of a patient.

Technician and patient inside series 401 room designed for single or double occupancy by patient and technician. A larger size room as required by many hospital clinics, Model 402 is also available.

Completely equipped for immediate operation!

- Ruggedly constructed of special metal clad I.A.C. Acoustic Panels.
- All materials used are non-combustible.
- Can be moved easily from one location to another.

INDUSTRIAL ACOUSTICS COMPANY, INC.
SPECIALISTS IN NOISE AND PULSATION CONTROL
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MAGNIFICENT DIFFERENCE
(Continued from page 17)

Third, is the purchasing of the aid itself.

Fourth, is getting used to the mechanics of wearing an aid, and it is at this stage that many hard-of-hearing people flounder. It's necessary that they get accustomed to the many extraneous noises which they haven't been hearing for many years, and it's necessary that they get used to the feeling of the instrument, the mechanical aspects of it, the ear piece, the cord.

Fifth: And then they have to get used to the social symbolism of the aid. The wearing of the hearing aid is an outward indication that they are hard of hearing. They're acknowledging to the world that they have a hearing loss. They're embarrassed, they have to get used to being marked as having a hearing loss.

Sixth: And the next thing is getting used to the concept of oneself as a hearing aid user. Some hard of hearing ultimately acquire the feeling that the hearing aid is part of themselves. In a confirmed hearing aid user, the aid actually becomes a part of themselves. They feel naked without it as I feel right now because my wristwatch is on the podium, as a woman would feel when she tries to step outside her home without her make-up on. That's how personal a hearing aid becomes.

Seventh: Then there is the next step of maintenance and repair.

Eighth: And finally the trade-in and purchase of a new aid. That completes the cycle.

Now I've recited those steps — contact, specific brand, purchase, mechanics, social symbolism, user concept, maintenance and repair, and purchase of a new model — because I would like to emphasize and throw a spotlight on the fact that in three of those areas, post-sale service is most important — learning to conquer the mechanical problems in using an aid, getting used to the social symbolism of the aid, getting used to the concept of being a user — and therein, ladies and gentlemen, lies the *magnificent difference* between what our competitor tried to accomplish and what we, you, everyone in this room are accomplishing every day, day in and day out because you *are* rendering the post-sale service of rehabilitation, of counseling, of adjusting, of re-fitting, of patience and of sympathetic understanding. The importance of the proper fitting was very ably demonstrated here today by Buel Kent. Fitting is not only a job that is done at the time the sale is made — certainly not when a package of electronics is handed over a counter — but a continuing process through weeks, months and possibly even years. It's that kind of service which is the *magnificent difference.*

Post-sale service is not only our responsibility, it is our opportunity. It is our moral responsibility to render that post-sale service because we have in fact been paid in advance, haven't we? And it is the prime justification for the higher price which we justifiably charge. Not to render that post-sale service is in fact dishonest and taking money under false pretenses.

And what's furthermore, it's our opportunity because it is in our self-interest to render that post-sale service because it leads to more referrals and leads to resales. And lest you think that that is a minimal factor, let me tell you that in this motivational study where we talked literally to hundreds of hard-of-hearing people in depth interviews, we found that over 15.7% of them did not buy the same brand that they were wearing a second time because "the salesman never came back."

What are we doing about this? Obviously, the key to post-sale service is the call-back, either at the distributor's office or on the part of the salesman in the home. Well, if you will indulge a little reference to

MOVIE SHOWS "STETHETRON" — Scene from the movie, "Not As a Stranger," showing Robert Mitchum using a Maico "Stethetron", an electronic stethescope that magnifies heart sounds as much as 10,000 times, to check the chest of Charles Bickford.

what we are doing at Beltone in the interest of giving you an idea of the things that can be done to encourage post-sale service, let me show you a few of the ideas that we use.

Here, for instance, is our "Creed." "With appreciation of the responsibility vested in me by the grant of a Fellowship . . . I solemnly dedicate myself to the service of the hard-of-hearing . . . To restore to them the happiness and comfort of better hearing . . . To serve them efficiently, continuously and unselfishly . . . To recognize the individuality of each case and to handle every assignment with painstaking care, patience and precision . . . And in my recommendations to provide *only* the latest developments of modern science and scientific skill . . . These constitute the pledges of this Creed to which my signature is affixed."

We ask every Beltone distributor and consultant to sign this, not necessarily in blood. Now, this may sound somewhat on a lofty plane, but to paraphrase Ed Murrow, "this we believe."

Not only do we believe that each individual should do that for his own users, but we believe that each Beltone distributor should honor the service requirements of a traveler, of somebody who has moved from one territory to another and so we've provided him with another certificate that he can frame and hang in his demonstration room or in his reception room. It reads: "Member Beltone World-Wide Service Association. Greetings to all Beltone Users, no matter in what city, or even foreign country, you bought your Beltone. We are pledged, as a member of Beltone's world-wide association, to give you courteous, sympathetic, understanding service for your hearing problems. Whenever you see this Certificate, in any Beltone office . . . anywhere in the world . . . you can be sure of personal interest in your needs and of technical skill to help you get the greatest possible enjoyment from your Beltone. We, like other members of this world-wide service association, promise you our whole-hearted devotion in helping you solve your hearing problem." This will give you an idea of how strongly we feel about the importance of post-sale service.

Here's another example. We have published a "Hear Again" booklet as a supplement to the instruction booklet in how to use a hearing aid. It handles the psychological problems that new users have to cope with and is dealt with in a sympathetic and understanding way to help the new users go about the job of rehabilitating themselves.

In our easel presentation the Beltone consultant commits himself to the fact that he "will be back within 30 days to recheck your hearing aid, help you with your personal problems in hearing again."

Some of our distributors have used a little initiative. Here's one from Los Angeles. Bob Flarsheim has devised a "Beltone Check Chart" which he gives to every new purchaser. It has room for dates: two weeks, one month, two months, four months, six months, 12 months, 18 months, 24 months, at which time he makes a date to come back for their further adjustment and service.

Len Gidley down in Kansas City has developed a call-back report form that he keeps in his tickler file for each of his consultants that comes up just as regularly as the reports on leads that he's passed out to them. This will give you an indication of the importance to which a man like Len Gidley attaches to this need for post-sale service — the *magnificent difference.*

And, of course, we've capitalized on that in our advertising. We're spending about a million dollars a year to tell the hard-of-hearing public the fact that we believe that personal service and individual fitting are the keynotes to the proper fitting or the proper handling of a hearing aid purchase on the part of the consumer. Then, of course, we have the master hearing aid, our Selectometer, to aid them in a better fitting job.

Now, what will post-sale service accomplish for you? Here are six benefits and I ask you to emblazon them in your mind and take them home with you because herein lies the future of our industry.

1) Good post-sale service will give you *enthusiastic boosters.* There is nothing greater in the world either for your personal morale or for that of your entire organization than the happy enthusiastic boosters and you can bind them to you "with hoops of steel" by proper post-sale service.

2) There are the resultant *referrals.* They will send you to Uncle Joe or Cousin Lee.

3) It will result in re-sales because we know, with the

(Continued on next page)

Letters TO THE EDITOR

Recognizes Need for Certification

Sirs:

I am what you might call a neophyte in the hearing field . . . I am pledged to the success of our firm and especially to the "Selling of hearing."

During my brief exposure to the myriad of ramifications that come with misleading advertising, a bad fitting, or poor follow-up after sales, I have readily recognized the need for certification of integrity and professional ability above and beyond our own words and deeds in good faith in gaining the confidence of the vast numbers of the hard of hearing not yet willing or able to realize the benefits of the hearing aid.

It is unfortunate that the industry is not yet mature enough to maintain an established dignity of its own in the eyes of the general public. I feel that your organization represents a part of the vested interests of those who are in this business to serve . . .

James F. Rench
Audiphone Company
Philadelphia, Pa.

MAGNIFICENT DIFFERENCE
(*Continued from previous page*)

dynamic business that we're in and with the tremendous technological progress that we've already seen in just the past ten years, that people do want the very best. It's really painful for them to think that there is a hearing aid on the market which could possibly be better than the one they're wearing. So good post-sale service will result in re-sales.

4) It means *good public relations*, the good public relations that we strive so hard to achieve for the industry. Certainly post-sale service is the best way to achieve it for each of us individually and for the industry.

5) It *builds morale*. It builds the morale of your office staff, the morale of your consultants, the morale of your entire staff to have post-sale service as a basic part of your everyday procedure.

6) And finally, it builds additional traffic which means that these folks will continue to come back to you and buy their batters, their cords, their garments, their repairs because you have treated them well.

I'm going to finish with a little story about the two scampy young boys that wanted to play a trick on a wise old man. This old man had the reputation of being able to solve almost any insurmountable problem. They decided to come to him with a little bird in the hands of one of them and they would ask this wise old man whether the bird was alive or dead. If the old man said it was alive, why they would crush it and show that he was wrong. If the old man said the bird was dead, they would open their hands and the bird would fly away. And sure enough, they came before this wise old man and they said, "Wise old man, is this bird alive or dead?" The wise old man thought a moment and his answer was "the answer, my sons, lies entirely in your hands."

out of this world
come new horizons
of better hearing . . .

VESTA

announcing the design of tomorrow TODAY
—the hearing aid you asked us to create....

the truly cordless VESTA
with the "EKIM RECEIVER"

Easily hidden in the hair, or clipped on the glasses back of the ear. Actual size only 2"x⅜"x½". It's the NEW LOOK in hearing aids; write today.

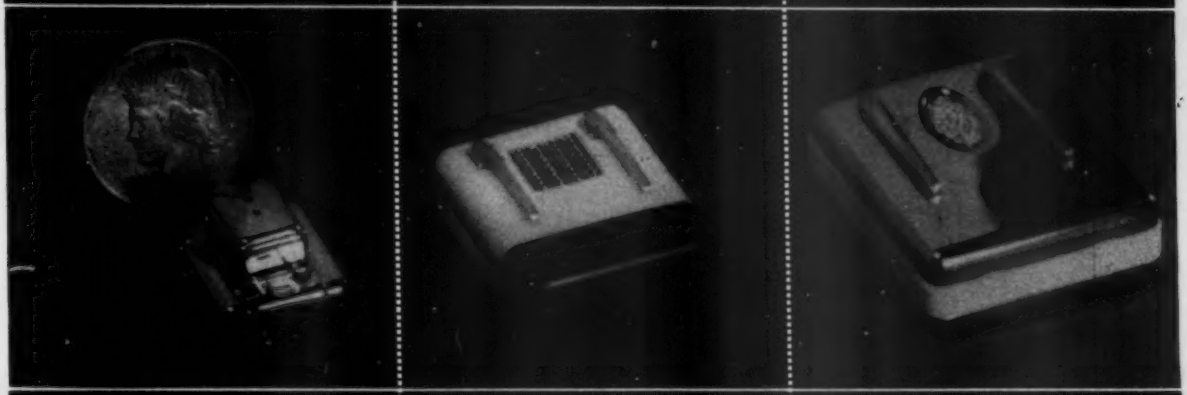
SOME TERRITORIES STILL AVAILABLE

COR-VOX (CORRECT-VOICE)
STANLEY WEBSTER LABORATORIES, Inc.
3951 WEST FULLERTON AVE., CHICAGO 47, ILLINOIS
Speech and Hearing Aid Devices

NOW... the most complete line of top quality, all transistor

COR-VOX HEARING AIDS

(CORRECT-VOICE)



STAR LINE

Astra Models

—the new standard for the industry . . . Astra established Webster COR-VOX aids as superior in quality, performance and service life. It's easier to sell the smallest, top-quality COR-VOX!

COMMANDER

1.25 or 2.5 Volt Power

—New series of fine quality aids in the medium price range. Excellent help for those with moderate hearing loss. Easily demonstrated, sold and serviced.

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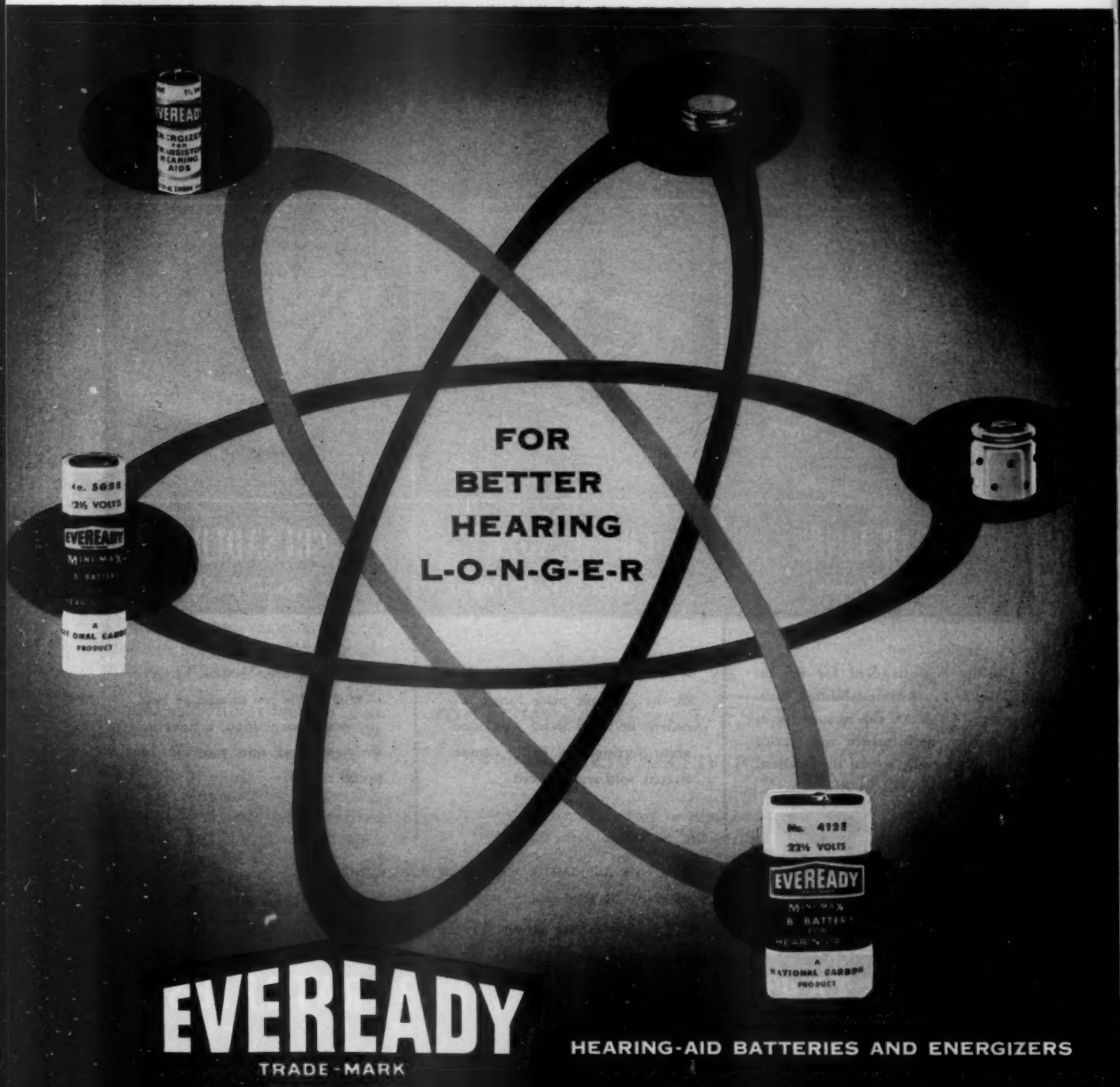

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